

Patent Claims

1. Measurement pickup of vibration-type, especially for producing mass-flow-dependent, Coriolis forces and/or for producing viscosity-dependent frictional forces in flowing fluids, which measurement pickup comprises:
- at least one measuring tube (1) for the conveying of a fluid, said measuring tube having an inlet end and an outlet end and vibrating at least at times,
 - wherein the measuring tube (1), for enabling the fluid to flow through the measuring tube, communicates, via a first tube segment (11) opening into the inlet end and via a second tube segment (12) opening into the outlet end, with a pipeline connected therewith, and
 - wherein the measuring tube (1) executes, during operation, mechanical oscillations about an imaginary oscillation axis (S) connecting the two pipe segments (11, 12); and
 - a support element (2) for oscillatable holding of the measuring tube (1),
 - having a first end piece (21) containing a passageway (21A) for the securement of the first tube segment (11) and
 - having a second end piece (22) containing a passageway (22A) for the securement of the second tube segment (12);
 - wherein each of the two tube segments (11, 12) extends through its respective one of the two passageways and each of the two passageways (22A, 22B) has an inner diameter, which is greater than an outer diameter of its associated tube segment (11, 12), so that an intermediate space (21B, 22B) is formed between each of the associated tube segments (11, 12) and end pieces (21, 22);
- characterized in that
- at least one of the two tube segments (11, 12) carries at least one, preferably metal, first spring element (31); and
 - wherein the spring element (31) is arranged in the intermediate space (21B, 22B) in such a manner that it contacts, at least sectionally, both its associated tube segment (11, 12) and also its associated end piece (21, 22)

in such a manner that it is subjected, at least sectionally, to radially acting, deformation forces and, as a result of elastic deformations accompanying such, is held pressed against the associated tube segment (11, 12) and the associated end piece (21, 22).

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2. Measurement pickup as claimed in claim 1, characterized further in that the first spring element (31) is embodied as a spring packet,

- which is composed of two or more leaf springs (31A, 32B) extending essentially radially with respect to the oscillation axis (S), and

10 - which so fills the intermediate space formed between tube segment (11, 12) and end piece (21, 22), at least in part, that the leaf springs contact both the associated tube segment (11, 12) and the associated end piece (21, 22).

15 3. Measurement pickup as claimed in claim 2, characterized further in that the leaf springs (31A, 32B) are embodied essentially in the shape of annular washers.

20 4. Measurement pickup as claimed in claim 2 or 3, characterized further in that the leaf springs (31A, 32B) have an essentially star-shaped and/or meandering structure.

25 5. Measurement pickup as claimed in one of the preceding claims 2 to 4, characterized further in that the leaf-springs (31A, 31B) are provided with essentially radial slots.

6. Measurement pickup as claimed in one of the preceding claims 2 to 5, characterized further in that the leaf springs (31A, 31B) lie one after the other in the direction of the oscillation axis (S).

30 7. Measurement pickup as claimed in one of the preceding claims, characterized further in that a layer of vibration-damping plastic is provided between at least two leaf springs (31A, 31B).

8. Measurement pickup as claimed in claim 1, characterized further in that the first spring element (3) is embodied as a Spieth-sleeve or as an annular-spring, locking element.

5 9. Measurement pickup as claimed in one of the preceding claims, characterized further in that a clamping apparatus (5), which is connected, preferably releasably, with the at least one end piece (21, 22), is provided for the first spring element (31), which introduces into the first spring element (31) deformation forces acting essentially in the direction of the oscillation
10 axis (S).

10. Measurement pickup as claimed in one of the preceding claims, characterized further in that a second spring element (32) is pushed onto the at least one tube segment (11, 12), and that a spacing ring (33) is arranged
15 between the two spring elements (31, 32).